CLAIMS

1. A charge coupled device (CCD) comprising a semiconductor body, a set of storage electrodes separated from the semiconductor body by a dielectric, and a back electrode, wherein the semiconductor body comprises polymer or oligomer material and the back electrode forms a Schottky junction with the semiconductor body by virtue of which the semiconductor body is depleted of majority charge carriers, so that when in use the storage electrodes are charged such as to attract the majority charge carriers, they create storage sites in the semiconductor body which can take either of a first state, in which there is an accumulation of majority charge carriers at the site, and a second state, in which such an accumulation is not present at the site.

2. A CCD as claimed in claim 1 which further comprises shift electrodes arranged between storage electrodes and separated from the semiconductor body by a dielectric, by means of which charge can be moved from one storage site in the semiconductor body to another.

3. A CCD as claimed in claim 1 or claim 2 wherein the back electrode is disposed on one side of the semiconductor body and the storage electrodes are disposed on the opposite side.

4. A CCD as claimed in any preceding claim wherein the semiconductor body is a thin layer at one face of which is the back electrode and at the other face of which are the storage electrodes and their associated dielectric.

5. A CCD as claimed in claim 4 wherein the region of majority charge carrier depletion created by the said Schottky junction extends through the full

depth of the semiconductor body.

6. A CCD as claimed in any preceding claim wherein the said Schottky junction provides a potential barrier to injection of majority charge carriers to the semiconductor body which is 10kT or greater, where K is Boltzmann's constant and T is the device's intended operating temperature in degrees Kelvin.

7. A CCD as claimed in any preceding claim wherein the back electrode is metal.

8. A CCD as claimed in any preceding claim wherein the polymer or oligomer material is conjugated.

9. A CCD as claimed in any preceding claim wherein the semiconductor body comprises poly-3-hexylthiophene.

10. A CCD as claimed in any preceding claim which further comprises a data input structure comprising an input electrode arranged adjacent a storage site in the semiconductor body to cause injection of majority charge carriers thereto.

11. A CCD as claimed in claim 10 wherein the input electrode forms a Schottky junction with the semiconductor body and the data input structure further comprises a transfer electrode adjacent the input electrode, such that applying to the transfer electrode a charge opposite to that of the majority charge carriers in the semiconductor body causes injection of majority charge carriers to a potential well formed in the semiconductor body by the transfer electrode.

12. A CCD as claimed in claim 10 in which data is encoded by provision of input electrodes adjacent to selected storage electrodes, so that upon initialisation an accumulation of holes is injected to the storage sites

corresponding to the selected storage electrodes and not to others.

13. A CCD as claimed in claim 12 wherein the input electrodes are connected to a common electrical line so that the device is initialised by applying an electrical potential to the line in order to drive majority charge carriers into the selected storage sites.

14. A CCD as claimed in any preceding claim wherein the semiconductor body comprises p type material and is adapted to be driven by application of negative potentials to the storage electrodes creating sites for hole accumulation in the semiconductor body.

15. A CCD as claimed in any preceding claim wherein alternating storage and shift electrodes are arranged to form a line along which majority charge carrier accumulations are passed in use.

16. A charge coupled device as claimed in claim 15 wherein the line of electrodes is addressed through first and second electric shift lines and comprises a series of electrode pairs each comprising a lower field shift electrode electrically connected to an adjacent higher field storage electrode, alternate such electrode pairs being electrically connected to the first and second shift lines respectively, such that by changing from time to time which of the shift lines is at more negative electrical potential, accumulations of majority charge carriers are passed along the line of electrodes.

17. A charge coupled device as claimed in any preceding claim wherein the shift electrodes are formed by a plurality of localised metal layers which are anodized to form an oxide layer which is the dielectric by which they are isolated

from the semiconductor body.

18. A charge coupled device as claimed in claim 17 wherein the semiconductor body comprises a layer of polymer or oligomer deposited over the metal layers.

19. A charge coupled device as claimed in any preceding claim connected to clocking circuitry which applies clocked negative potentials to the storage electrodes.

20. A method of manufacturing a charge coupled device comprising

forming upon a substrate a first localised metal layer to serve as a first set of electrodes,

anodising the first metal layer to form an oxide layer upon it;

forming a second localised metal layer to serve as a second set of electrodes,

anodising the second layer to form an oxide layer upon it;

forming over the metal layers a semiconductor body of polymer or oligomer material and

forming upon the semiconductor body a metal back electrode, the material of the back electrode and of the semiconductor body being such that together they form a Schottky junction by virtue of which the semiconductor body is depleted of majority charge carriers.

21. A charge coupled device substantially as herein described with reference to , and as illustrated in, accompanying Figures 2-7 or Figure 8.

22. A method of manufacturing a charge coupled device substantially as herein described with reference to, and as illustrated in, accompanying Figures 2-7 or Figure 8.